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EXAMINER	
WOLDEMARIAM, AKILILU K	

ART UNIT	PAPER NUMBER
2609	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/755,868	KALEVO, OSSI	
	Examiner	Art Unit	
	Aklilu k. Woldemariam	2609	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05 July 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-37* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-37* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 January 2004* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *See Continuation Sheet*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Priority

1. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

Information Disclosure Statement

2. The information disclosure statement (IDS) submitted on Nov 09, 2005 was filed after the mailing date of Nov 09, 2005. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the examiner is considering the information disclosure statement.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. **Claim 37** is rejected under 35 U.S.C. 102(b) as being anticipated by Weinberger et al., " Weinberger" (U.S. Patent number 5, 680, 129).

Regarding claim 37, Weinberger discloses **a device for image processing** (see fig.15), **which device comprises a decoder which is arranged to process an image with a limited number of bits in the bit string of a pixel, which decoder is also arranged to decode the pixel to its original number of bits, wherein the decoder is arranged to recognize the code word from the bit string** (see fig.13) **and to decode the pixel by the encoding method indicated in the code word, wherein the**

decoder comprises memory means for storing at least one decoded pixel as a prediction value, wherein the decoder is arranged to retrieve the prediction value corresponding to the pixel from the memory means (see items 1205, 1209 and 1211, fig.12 and items 709, 711, 1301 and 1303, fig.13 and column 16, lines 45-51 and 60-67).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. **Claims 1-4, 9-13, 19-23, 26-33 and 36** are rejected under 35 U.S.C. 103(a) as being unpatentable over Weinberger, as applied to claim 37, above and in view of Kato, thereafter, Kato (U.S. Patent number 5, 392, 037).

Regarding claims 1 and 23, Weinberger discloses **a method and a device for image Processing, in which the number of bits is limited in the bit string of a pixel, wherein the pixel is encoded with a restricted number of bits** (see item 209, fig.2, column 4, lines 49-50 and column 6, lines 29-30), **wherein the method comprises steps of searching for a prediction value corresponding to the pixel is** (item 109, fig.1, column 4, lines 58-61, column 5, lines 14-17, and column 6, lines 46-49); **to select the method for encoding the bit string of the pixel** (items 703, 711, fig.7 and column 8, lines 49-55); **in the bit string, encoding a code word to indicate**

the selected encoding method (see item 709, fig.7); **and the restricted number of bits is fixed for substantially all of the encoded pixels in the image** (see column 4, lines 49-50, column 6, lines 15-16 and 29-30).

Weinberger does not disclose **after the prediction value has been found, determining the difference between the pixel and the prediction value.**

However, Kato discloses **after the prediction value has been found, determining the difference between the pixel and the prediction value** (see column 3, lines 15-17 and 54-56, i.e., prediction value referred as to estimate).

It would have been obvious to someone of the ordinary skill in the art at the time when the invention was made to use Kato's determining the difference between the pixel and the prediction value in Weinberger's a method for image processing, in which the number of bits is limited in the bit string of a pixel because it is easy to understand, [Kato's, see column 3, lines 15-17].

Regarding claim 2, Weinberger discloses **the method according to claim 1, wherein the code word to indicate the selected encoding method is of fixed length** (see column 6, lines 15-16).

Weinberger does not disclose **selected encoding method is a variable length.**

However, Kato discloses **selected encoding method is a variable length** (see column 4, lines 31-40).

It would have been obvious to someone of the ordinary skill in the art at the time when the invention was made to use Kato's selected encoding method is a variable length in Weinberger's a method for image processing, in which the number of bits is

limited in the bit string of a pixel because it is easy to see, [Kato's, see column 4, lines 32-35].

Regarding claim 3, Kato discloses **the method according to claim 1, Wherein quantizing is used to encode the bit string, wherein first a limit value is determined, wherein the difference is compared with the limit value in such a way that when the difference is smaller, the difference is quantized in the encoding of the bit string, whereas when the difference is greater, the original value of the pixel is quantized in the encoding of the bit string** (see column 6, lines 5-19 and column 7, lines 7-11).

Regarding claim 4, Kato discloses **the method according to claim 3, wherein the code word is determined on the basis of the original and limited number of bits in the pixel in such a way that the code word length does not exceed N - (M - 1) where M corresponds to the limited number of bits and N corresponds to the original number of bits** (see items 38, 44 and fig.3B).

Regarding claim 8, Kato discloses **the method according to claim 1, wherein the prediction value is the value of one encoded pixel value or the average of several Encoded pixel values** (see item 504, fig.5).

Regarding claim 9, Kato discloses **the method according to claim 1, wherein in the absence of a prediction value, the bit number is limited by quantizing the pixel** (See fig.4 a and b).

Regarding claim 10, Weinberger discloses **the method according to claim 1, Wherein in the method, the bit string is decoded by using a decoding method**

Corresponding to the used encoding method (see column 7, lines 1-3).

Regarding claim 11, Weinberger discloses **the method according to claim 1, wherein the pixel is encoded for transfer between a camera module and an electronic device** (see column 22, lines 46-47).

Regarding claim 12, Weinberger discloses **an image processing system** (see fig.15) **Which is configured to process an image with a limited number of bits in the bit string of a pixel, wherein the system comprises means for encoding the pixel to the limited number of bits** (item 209, fig.2 and column 4, lines 49-50 and column 6, lines 29-30), **wherein the system also comprises means for searching for a prediction value corresponding to the pixel** (see item 109, fig.1, column 4, lines 58-61, column 5, lines 14-17 and column 6, lines 46-49); **after the prediction value has been found, the system is fitted, wherein the means for encoding the pixel are arranged to encode the bit string of the pixel by the encoding method indicated by the difference as well as to encode, in the bit string, also a code word to indicate the encoding method indicated by the difference** (items 703, 709 and 711, fig.7 and column 8, lines 49-55); **and the restricted number of bits is fixed for substantially all of the encoded pixels in the image** (see column 4, lines 49-50 and column 6, lines 15-16 and 29-30).

Weinberger does not disclose **determine the difference between the pixel and the prediction value.**

However, Kato discloses **determine the difference between the pixel and the prediction value** (see column 3, lines 15-17 and 54-56, i.e., prediction value referred as to estimate).

It would have been obvious to someone of the ordinary skill in the art at the time when the invention was made to use Kato's determining the difference between the pixel and the prediction value in Weinberger's a method for image processing, in which the number of bits is limited in the bit string of a pixel because it is easy to understand, [Kato's, see column 3, lines 15-17].

Regarding claim 13, Kato discloses **the system according to claim 12, wherein in the absence of a prediction value, the system is arranged to quantize the value of the pixel** (see fig. 4a and b).

Regarding claim 19, Kato discloses **the system according to claim 12, Wherein the prediction value is the value of one encoded pixel value or the average of several encoded pixel values** (see item 504, fig.5).

Regarding claim 20, Weinberger discloses **the system according to claim 12, Wherein the system also comprises means for decoding the bit string to correspond to the encoding** (see column 7, lines 1-3).

Regarding claim 21,Weinberger discloses **the system according to claim 12, Wherein the system also comprises a camera module and an electronic device** (see column 22, lines 46-47).

Regarding claim 22, Weinberger discloses **the system according to claim 21,**

wherein the electronic device comprises means for performing mobile communication (see column 15, lines 25-26).

Regarding claim 24, Kato discloses **the device according to claim 23, wherein the device also comprises means for quantizing the pixel, which means are, also arranged to quantize the value of the original pixel in the absence of a prediction value** (see fig.4a and b).

Regarding claim 26, Weinberger discloses **the device according to claim 23, wherein the device also comprises means for decoding the bit string in the way indicated by the code word** (see column 14, lines 58-64).

Regarding claim 27, Weinberger discloses **the device according to claim 23, wherein the device also comprises a camera module** (see column 22, lines 46-47).

Regarding claim 28, Weinberger discloses **the device according to claim 27, wherein the device also comprises means for performing mobile communication** (see column 15, lines 25-26).

Regarding claim 29, Weinberger discloses **the device according to claim 23, wherein the device also comprises means for performing mobile communication** (see column 15, lines 25-26).

Regarding claim 30, Weinberger discloses **a computer software product for image processing** (see items 205 and 1201 fig.15), **which computer software product comprises a storage means** (see items 1501 and 1509, fig.15) **which storage means comprises computer software instructions for image processing with a limited number of bits in the bit string of a pixel, as well as for encoding**

the pixel to the limited number of bits (item 209, fig.2, column 4, lines 49-50 and column 6, lines 29-30), **wherein the storage means also comprises computer instructions to search for a prediction value corresponding to the pixel** (see items 1501 and 1509, fig.15, column 4, lines 58-61, column 5, lines 14-17, and column 6, lines 46-49) ; **to encode the bit string of the pixel by the encoding method indicated in the difference, as well as to encode, in the bit string, the code word indicating the encoding method indicated by the difference; and the restricted number of bits is fixed for substantially all of the encoded pixels in the image** (see column 4, lines 49-50 and column 6, lines 15-16).

Weinberger discloses **computer instructions to determine the difference between the pixel and the prediction value.**

However, Kato discloses **computer instructions to determine the difference between the pixel and the prediction value** (see column 3, lines 15-17 and 54-56, i.e., prediction value referred as to estimate).

It would have been obvious to someone of the ordinary skill in the art at the time when the invention was made to use Kato's determining the difference between the pixel and the prediction value in Weinberger's a method for image processing, in which the number of bits is limited in the bit string of a pixel because it is easy to understand, [Kato's, see column 3, lines 15-17].

Regarding claim 31, Weinberger discloses **a camera module for image Processing** (see item 1505, fig.15), **which camera module is fitted to process an image with a limited number of bits in the bit string of a pixel, wherein the camera**

module also comprises means for encoding the pixel to the limited number of bits (item 209, fig.2, column 4, lines 49-50 and column 6, lines 29-30), **wherein the camera module comprises means to search for a prediction value corresponding to the pixel** (see item 1505, column 4, lines 58-61, column 5, lines 14-17, and column 6, lines 46-49); **the camera module** (see item 1505, column 4, lines 58-61, column 5, lines 14-17, and column 6, lines 46-49), **wherein the means to encode the pixel are arranged to encode the bit string of the pixel by the encoding** (see fig.7) **method indicated by the difference as well as to encode, in the bit string, also a code word to indicate the encoding** (see fig.7) **method indicated by the difference; and the restricted number of bits is fixed for substantially all of the encoded pixels in the image**(see column 4, lines 49-50 and column 6, lines 15-16).

Weinberger does not disclose **determine the difference between the pixel and the prediction value.**

However, Kato discloses **determine the difference between the pixel and the prediction value** (see column 3, lines 15-17 and 54-56, i.e., prediction value referred as to estimate).

It would have been obvious to someone of the ordinary skill in the art at the time when the invention was made to use Kato's determining the difference between the pixel and the prediction value in Weinberger's a method for image processing, in which the number of bits is limited in the bit string of a pixel because it is easy to see, [Kato's, see column 3, lines 15-17].

Regarding claim 32, Weinberger discloses **a circuit for image processing, which**

Circuit comprises an encoder and a decoder (see fig.7 and fig.113), **which encoder is arranged to process an image with a limited number of bits in the bit string of a pixel, wherein the encoder is arranged to encode the pixel to the limited number of bits** (see items 209, fig.2, column 4, lines 49-50 and column 6, lines 29-30), **wherein the encoder comprises storage means for storing at least one decoded pixel as a prediction value** (item 1501, fig.15 and column 4, lines 58-61, column 5, lines 14-17 and column 6, lines 46-49), **wherein the encoder is arranged to retrieve the prediction value corresponding to the pixel from the storage means** (item 1501, fig.15 and column 4, lines 58-61, column 5, lines 14-17 and column 6, lines 46-49) ; **wherein the encoder is arranged to encode the bit string of the pixel by the encoding** (see fig.7) **method indicated by the difference as well as to encode, in the bit string, also a code word to indicate the encoding** (see fig.7) **method indicated by the difference; and the restricted number of bits is fixed for substantially all of the encoded pixels in the image** (see column 4, lines 49-50 and column 6, lines 15-16 and 29-30).

Weinberger does not disclose **the encoder comprises means for determining the difference between the pixel and the prediction value.**

However, Kato discloses **the encoder comprises means for determining the difference between the pixel and the prediction value** (see column 3, lines 15-17 and 54-56, i.e., prediction value referred as to estimate).

It would have been obvious to someone of the ordinary skill in the art at the time when the invention was made to use Kato's determining the difference between the

pixel and the prediction value in Weinberger's a method for image processing, in which the number of bits is limited in the bit string of a pixel because it is easy to see, [Kato's, see column 3, lines 15-17].

Regarding claim 33, Kato discloses **the circuit according to claim 32, wherein in the absence of a prediction value, the encoder is arranged to quantize the value of the pixel** (see fig.4a and b).

Regarding claim 36, Weinberger discloses **the circuit according to claim 32, wherein the decoder is arranged to decode the bit string by a decoding method corresponding to the encoding method used** (see column 7, lines 1-3).

Claims 6-7, 14, 17-18, 25, 34-35 are rejected under 35 U.S.C. 103(a) as being unpatentable over Weinberger in view of Kato as applied to claims 1, 12, 23, 30, 31, 32 above, and further in view of Jones et al., "Jones" (U.S. Patent number 4, 847, 866).

Regarding claim 6, Jones discloses **the method according to claim 1, wherein the encoding method to be used is selected between DPCM and PCM coding in such a way that code word lengths greater than one indicate the use of DPCM coding, wherein the code word length of one indicates the use of PCM coding** (see column 2, lines 40-50).

Regarding claim 7, Jones discloses **the method according to claim 1, wherein the encoding method to be used is selected between ordinary DPCM coding and Smart DPCM coding in such a way that code word lengths greater than one indicate the use of DPCM coding, wherein the code word length of one indicates the use of smart DPCM coding** (see column 2, lines 40-50).

Regarding claim 14, Jones discloses **the system according to claim 12, wherein the system also comprises means for determining a limit value, wherein the system is also arranged to compare the difference with the limit value in such a way that when the difference is smaller, the system is arranged to quantize the difference, whereas when the difference is greater, the system is arranged to quantize the original value of the pixel** (see fig.6 and column 2, lines 43-44).

Regarding claim 17, Jones discloses **the system according to claim 12, wherein the system also comprises a DPCM codec and a PCM codec, wherein code word lengths greater than one indicate the use of the DPCM codec, wherein the code word length of one indicates the use of the PCM codec** (see column 2, lines 40-50).

Regarding claim 18, Jones discloses **the system according to claim 12, wherein**

the system also comprises an ordinary DPCM codec and a smart DPCM codec, wherein code word lengths greater than one indicate the use of the DPCM codec, wherein the code word length of one indicates the use of the smart DPCM Codec (see column 2, lines 40-50).

Regarding claim 25, Jones discloses **the device according to claim 23, wherein the device also comprises means for determining a limit value, wherein the device is also arranged to compare the difference with the limit value in such a way that when the difference is smaller, the device is arranged to quantize the difference, whereas when the difference is greater, the device is arranged to quantize the original value of the pixel** (see fig.3, 4 and 6, column 1, lines 64-66 and column 2, lines 1-5).

Regarding claim 34, Jones discloses **the circuit according to claim 32, wherein the encoding method to be used is DPCM or PCM coding** (see column 2, lines 40-50).

Regarding claim 35, Jones discloses the circuit according to claim 32, wherein the encoding method to be used is ordinary DPCM coding or smart DPCM coding (see column 2, lines 40-50).

6. **Claims 5, 15 and 16** are rejected under 35 U.S.C. 103(a) as being unpatentable over Weinberger in view of Kato as applied to claims 1, 12, 23, 30, 31, 32, 37 above, and further in view of Jones and further in view of Anderson et al., "Anderson" (U.S. Patent number 5, 790, 705).

Regarding claims 5 and 16, Anderson discloses **the method and system according to claims 4 and 15, wherein the code word is determined on the basis of the original and limited number of bits in the pixel in such a way that the code word length is two when the change is less than 32 bits** (see fig.4B), **and that the code word length is three when the change is more than 31 and less than 128 bits, wherein when the change exceeds 128 bits** (see fig.4B), **the code word length is selected to be one** (see column 5, lines 22-28), **wherein the encoding method is changed.**

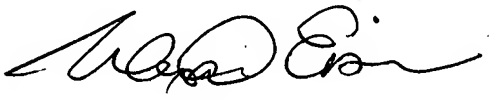
Regarding claim 15, Anderson discloses **the system according to claim 14, wherein the system is arranged to determine the code word on the basis of the original and limited number of bits in the pixel in such a way that the code word length does not exceed N - (M-1) where M corresponds to the limited number of bits and N corresponds to the original number of bits** (see items 38, 44 and fig.3B).

Conclusion

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Aklilu k. Woldemariam whose telephone number is 571-270-3247. The examiner can normally be reached on Monday-Thursday 6:30 a.m-5:00 p.m EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Alexander Eisen can be reached on 571-272-7687. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



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09/10/2007

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :6/17/2004;11/09/2005;07/05/2007.